

**CLAIMS**

1. A security paper comprising at least two fibrous paper plies, the first ply being an external ply that includes at least one authentication element and the other ply, said second ply, comprising:
  - a reinforcing element substantially absent from the first ply, said reinforcing element being chosen from materials that improve the mechanical strength; and/or
  - another authentication element and the authentication element of said first ply being absent from the second ply.
2. The security paper as claimed in the preceding claim, characterized in that said reinforcing element is chosen from synthetic fibers, especially polyester or polyamide fibers, natural textile fibers, especially abaca, hemp, flax, Chinook fibers, and mixtures thereof.
3. The security paper as claimed in claim 2, characterized in that said polyester fibers are polyethylene terephthalate fibers, in particular they are present in an amount of between 10 and 20 parts by dry weight per 100 parts of the other fibers of said second ply.
4. The security paper as claimed in one of the preceding claims, characterized in that said authentication element of said first ply, and where appropriate that of said second ply, can be detected optically.
5. The security paper as claimed in claim 4, characterized in that said authentication element is chosen from watermarks, iridescent particles, luminescent, in particular fluorescent or phosphorescent, fibers or particles, colored or

thermochromic fibers or particles, in particular said particles are flakes.

5 6. The security paper as claimed in one of the preceding claims, characterized in that said authentication element of one of the plies reacts to certain stimulations, giving a specific signal that can be detected using a suitable apparatus.

10 7. The security paper as claimed in claim 6, characterized in that said element is chosen from substances that react to electromagnetic fields, in particular of the microwave type.

15 8. The security paper as claimed in one of the preceding claims, characterized in that said external first ply includes a watermark as authentication element and has a thickness substantially greater than that of said second ply or of the other plies,  
20 preferably about 1.5 to 2 times greater.

9. The security paper as claimed in one of the preceding claims, characterized in that said reinforcing element also has an authentication  
25 function.

10. The security paper as claimed in claim 9, characterized in that said reinforcing element constitutes the authentication element of said second  
30 ply.

11. The security paper as claimed in one of the preceding claims, characterized in that said second ply includes said reinforcing element and in that said  
35 paper has a tear index of 10 mN.m<sup>2</sup>/g or higher.

12. The security paper as claimed in one of the preceding claims, characterized in that the plies are based on cotton fibers.

13. The security paper as claimed in one of the preceding claims, characterized in that it comprises three fibrous plies, said external first ply having an authentication element, said second ply being central and having said reinforcing element, and the third ply being another external ply having an authentication element that may be different from that of said first ply.

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14. The security paper as claimed in one of the preceding claims, characterized in that it is a banknote paper.

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15. A process for manufacturing a security paper as claimed in one of the preceding claims, characterized in that said plies are assembled wet.

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16. The process for manufacturing a security paper as claimed in the preceding claim, characterized in that said external first ply includes a watermark and is formed on a cylinder-mold machine that includes a watermark wire.